IMPORTANT BEHAVIOURISTIC THEORIES

BEHAVIOURISTIC THEORIES

PAVLOV

THORNDIKE

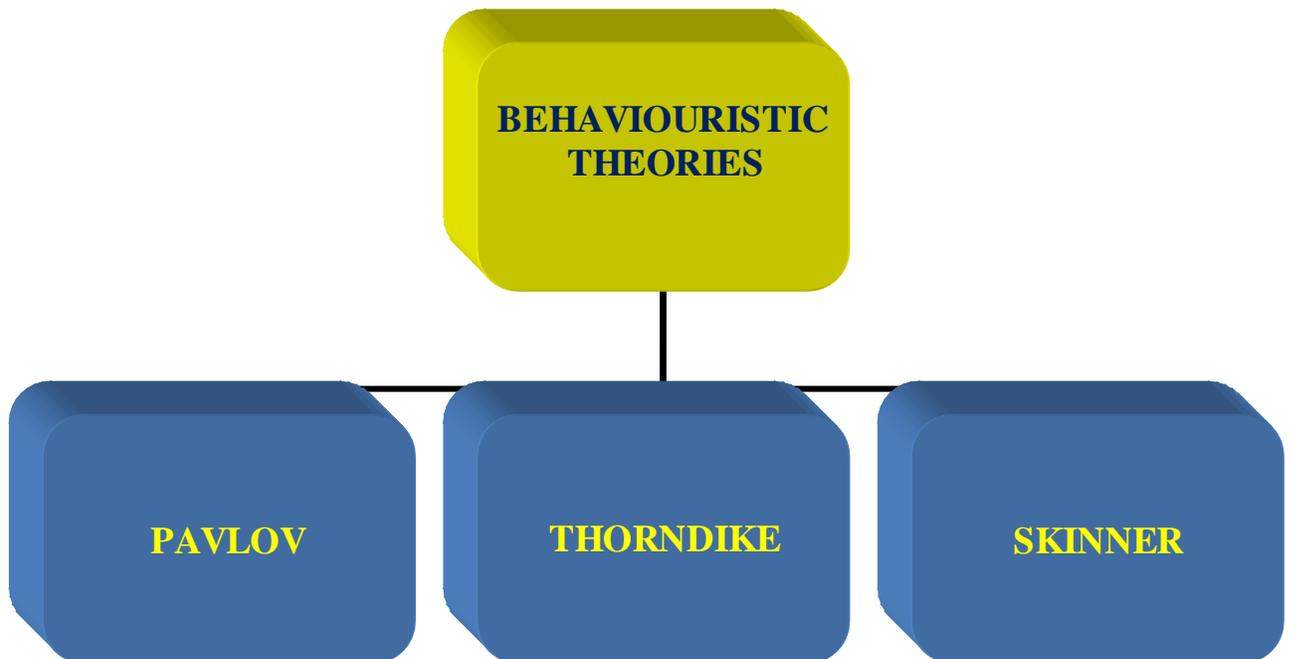**SKINNER**

PAVLOV'S CLASSICAL CONDITIONING

I. **Introduction:** Ivan Pavlov (1849-1936) was a Russian Physiologist who won Nobel Prize (1904) for his work on digestion. Today he is generally regarded as a psychologist though his work is considered part of physiology.

II. **Classical Conditioning:** It is a kind of learning in which a previously neutral stimulus acquires the property of a natural stimulus, come to elicit a response, through its association with a stimulus that naturally brings about the response. It is also called signal learning.

III. **Pavlov's Experiment with dog:** A deprived dog confined in a one way glass sound proof cabin with metronome inside and a devise to drop meat powder in front of it. Sound is followed by meat within ½ second. Sound alone elicited salivation after conditioning.

IV. **Important Terms:**

1. Neutral Stimulus: A stimulus that before conditioning has no effect on desired response. Eg. Sound of a buzzer

2. Unconditioned Stimulus (UCS): A stimulus that brings about response naturally (without having being learned) Eg. Meat powder

3. Unconditioned Response (UCR): A response that is natural and needs no training. Eg. Salivation at the smell of food.

4. Conditioned Stimulus (CS): A once neutral stimulus that has been paired with an UCS to bring about a response formerly caused only by the UCS. Eg:-Sound eliciting salivation

5. Conditioned Response (CR): A response that, after conditioning follows a previously neutral stimulus. Eg. Salivation at the sound of a buzzer.

In classical conditioning, conditioning of respondent behaviour occurs through a process of stimulus association and substitution.

V. **Extinction :** The process through which a CS gradually loses ability to evoke CR, when it is no longer followed by UCS.

VI. **Spontaneous Recovery :** Reappearance of weakened CR to a CS after an interval of time following extinction.

VII. **Reconditioning:** The rapid recovery of a CR to CS – UCS paring following extinction.

VIII. **Stimulus Generalisation:** The tendency of stimuli similar to a CS to evoke a CR. The greater the similarity between two stimuli, the greater the likelihood of stimulus generation.

IX. **Stimulus Discrimination:** The process by which an organism learners to differentiate among stimuli, restricting its response to one in particular.

X. **High Order Conditioning**: A conditioning stimulus (CS), eg. Sound of turning fork, can be used as UCS to produce further conditioning.

XI. **Experimental Neurosis:** When discrimination of CS & UCS becomes impossible, the brain cell interaction leads to neurotic behaviour.

XII. **Neural Basis of Classical Conditioning:** Researchers indicate that the site of conditioned response is cerebellum, a brain structure involved in balance and coordination. Other structures now known to be involved are hippocampus, amygdala and brain stem areas that project to or receive information from cerebellum

XIII. <u>Why classical conditioning is included in B.Ed. Curriculum?</u>

- Most of the emotional experience can be conditioned –
- The attitude of students towards school, of teachers towards children and towards some class divisions are through the process of stimulus generalisation.
- Develop good habits.
- Develop interest and sense of appreciation.
- Eliminate undesirable habits.
- Eliminate phobias.
- Use in psychotherapy.
- Useful for language learning.
- Useful for animal training.
- 'Experimental Neurosis' indicates that unless similar concepts are properly differentiated, the likelihood of confusion and problems in learning.

Questions

1. Define Classical Conditioning?
2. What is the educational implication of experimental neurosis?
3. Distinguish between stimulus generalisation and stimulus discrimination.
4. How extinction differ from spontaneous recovery in classical conditioning?
5. Describe briefly the relevance of classical conditioning in education?
6. Explain Pavlov's experiment with classroom implications

THORNDIKE'S TRIAL & ERROR / SUCCESS THEORY

I. **Introduction:** Edward Lee Thorndike (1874-1949) was an American Psychologist.

II. **Experiment with Cat:** A deprived cat in a puzzle box with a lever that would enable it to get out if pressed- and a fish visible to it kept out side – random trails, progressive elimination of errors & successive approximation of learned response.

III. **Principles of Learning based on Thorndike's Experiment**

   a. Learning involves trial and error.
   b. Learning is the result of formation of connection or bonds (S-R)
   c. Learning is incremental not insightful
   d. Learning is direct; not cognitive.
   e. The S-R connections are established in nervous system.
   f. The connection (bond) strength can be increased or decreased.

IV. **Laws of Learning based on Thorndike's Experiment**

   All laws explain how to strengthen / weaken S-R Bonds

   1. *Law of Effect:* When a modifiable connection between stimulus and response is made and is followed by satisfying state of affairs, that connections strength is increased. When made and accompanied by an annoying state of affairs, its strength is decreased. It emphasises the role of reward and punishment in education.

Revised law of Effect: An unpleasant situation / punishment need not necessary decrease the strength of S-R connection.

2. *Law of Exercise:*
   a. Law of Use – Other things being equal, the more frequently, a modifiable connection is made between a stimulus and response, that connection strength is increased.
   b. Law of disuse: Other things being equal when a modifiable connection not made between stimulus and response over a period of time, that connection strength is decreased.
   c. Revised law of exercise: Mechanical use / disuse does not necessarily lead to effective learning / total forgetting.

3. *Law of Readiness:*
a) When any conduction unit is ready to conduct for it to do so is satisfying.
b) When any conduction unit is not ready to conduct, for it to conduct is annoying.
c) When any conduction unit is ready to conduct for it not to conduct is annoying.
Satisfaction strengthens the bond, but annoyance weakens.

V. **Supplementary laws of Learning :**

4. Law of multiple response:- When an individual faces a problem, he responds in a variety of ways before arriving at correct response.

5. Law of attitude:- Individual leans better if he develops a positive attitude.

6. Law of analogy:- When an individual faces a problem, the response he makes will resemble to an earlier response in a similar situation.

7. Law of pre-potency of elements:- Learner reacts to the learning situation in a selective manner, due to the influence of past experience.

8. Law of Associative Shifting:- Any response may be elicited from the learner, of which he is capable, in association with any situation to which he is sensitive.

VI. Educatonal implications of trial and error theory in B.Ed Curriculum

a. Motivate the child before learning.

b. Make use of the previous knowledge.

c. Arrange task from simple to complex

d. Strengthen S – R connections of those things to be remembered by regular use/ practice weaken others by disuse or by annoying consequences.

e. Rote memory and mechanical repetition may be resorted judiciously.

f. Punishment should be judiciously used.

g. Provide maximum opportunity to review.

h. Provide rewards, prize and praise.

Questions

- Comment on revised Law of Effect.
- Define Law of Readiness
- How Law of Exercise is useful for teachers?

- Explain the principles of learning based on Thorndike's experiment.
- Describe briefly the supplementary laws of learning

- Explain Thorndike's theory of learning with special emphasis on classroom implications

SKINNER'S OPERANT CONDITIONING

I.   **Introduction:** B. F. Skinner (1904 – 1990) was a professor at Harvard University.

II. **Operant Conditioning / Instrumental Conditioning:** It is defined as a process of learning whereby a response is made more frequent / more probable by reinforcement. He holds the view that behaviour can be shaped by reinforcement, and by chaining reinforcement, complex behaviour also can be shaped.

III. **Skinner's Experiment with Rat & Pigeons:** Skinner Box – deprived organism – emitted response - instantly followed by reinforcement – eg. Pecking a disc and getting a pellet of grain-repetition of the response.

IV. **Important Terms**

- **Reinforcement/Reinforcer**: A reinforcer is the stimulus whose presentation or removal increases the probability of a response reoccurring. It is important that reinforcer is contingent upon response ie, response result in the occurrence of reinforcer. Reinforcement is the process of manipulating the reinforcer.

- **Positive Reinforcement**: Any pleasant stimulus whose presentation increases the likelihood of a particular behaviour. Eg. Prize to a child.

- **Negative Reinforcement:** Any aversive stimulus, the removal of which increases the likelihood of a particular behaviour. Eg. Electric shock

- **Punishment:** The presentation of an unpleasant stimuli after an undesirable response.

- **Omission Training:** Positive reinforcement is withdrawn following an undesirable response . Eg:- Parents turning off TV following some undesirable behaviour.

- **Primary Reinforcer:** Reinforcer which directly satisfies physiological needs. Eg:-Food, Water,

- **Secondary Reinforcer:** Reinforcer that satisfies acquired need rather than inborn ones. Eg. Money is a good secondary reinforcer. It does not satisfy any physical need directly.

- **Shaping:-** It refers to the judicious use of selective reinforcement to bring certain desirable changes in the behaviour of the organism. The basic process in shaping is successive approximation to the desired behaviour. Eg. Skinner taught a pigeon to walk in a fig.8 through shaping.

  At first Pigeon got its reward for simply turning its head in right direction, then for taking a step in the right direction, then for making the correct turn, and so on until it had learned to do a complete figure – 8.

  It is useful as a technique for introducing desirable modification in the behaviour.

- **Stimulus Generalisation:** Tendency of similar stimuli to elicit same response.

- **Stimulus Discrimination:** Probability for response to occur more often in the presence of one stimulus than others.

- **<u>Why Skinner's Operant Conditioning is included in B.Ed. Curriculum?</u>**

    1. Learning process should be so designed as to create minimum frustration and maximum satisfaction, because behaviour depends on consequence.
    2. Useful for behaviour modification.
    3. The complex learning task to be presented in simple units with provision for reinforcement after each unit.
    4. Motivation, especially extrinsic should be given importance.
    5. Reinforcement should be given at proper time.
    6. Avoid punishment.
    7. Ignore improper behaviour for extinction.
    8. Useful for programmed instruction & PSI

Programmed Instruction (P I)

A method of teaching, using teaching machines, a device for serial presentation of 'frames' with smallest teaching units with provision for immediate testing and feedback – self learning strategy with built in feedback mechanism.

<u>Following steps of shaping is used in PI</u>

1. Complex task should be reframed into simpler tasks, for presenting.
2. Reinforcement contingent upon performance of each step.
    (Knowledge of result or feedback is the reinforcement)
3. Learning proceeds at his own pace. (Self initiated learning}

Personalised system of Instruction (PSI)

Also known as Keller Plan. Fred. S. Keller developed it to teach psychology for post graduate students, dividing the entire portion of the course into small units, each learned by the student, tested by the proctor before proceeding to next unit.

1. Materials of courses is divided into simple units, each must be mastered before entering to the next.
2. Take their own pace.
3. Being allowed to go to the next unit after mastery of first unit is the reinforcement.

Questions

1. Define Operant Conditioning.
2. Distinguish punishment from Negative reinforcement
3. Differentiate between punishment and omission training
4. Discuss how Operant Conditioning is useful for PSI.
5. Explain shaping with an example.
6. Suggest an instructional programme based on operant conditioning theory of B.F. Skinner and explain it.
7. Explain Instrumental Conditioning theory of B.F. Skinner with special emphasis on classroom implication.

Reference:

1. Atkinson & Hilgard – Introduction to Psychology (2009)
2. Berkeley Calif & Mc Cutchan – Learning and Instruction (1977)
3. Crow, LDT Crow Alice – Human Development & Learning (1964)
4. Fernald / Fernald - Introduction to Psychology (V Edition),2001
5. Gari. R. - The Psychology of Learning
6. Hilgard. R. – Theories of Learning (1956)

7. James .W. Kalat – Biological Psychology, V Edn. Books & Cole, 1993

8. Rober .A. Baron   - Psychology (V Edition)

9. Robert. F. Biehler – Psychology

10. Robert .S. Feldman – Understanding Psychology (IV Edition)]

11. Willam S. Sahakian – Theory of Learning